

Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) EP 1 108 799 A3

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
21.11.2001 Bulletin 2001/47

(51) Int Cl.7: C22C 23/02

(43) Date of publication A2:  
20.06.2001 Bulletin 2001/25

(21) Application number: 00125394.7

(22) Date of filing: 04.12.2000

(84) Designated Contracting States:  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR  
Designated Extension States:  
AL LT LV MK RO SI

- Hirane, Teruo  
Hitachinaka-shi, Ibaraki 312-0011 (JP)
- Uchida, Toshio  
Hitachinaka-shi, Ibaraki 312-0012 (JP)
- Abe, Teruyoshi  
Hitachi-shi, Ibaraki 319-1225 (JP)

(30) Priority: 03.12.1999 JP 34421099

(71) Applicant: Hitachi, Ltd.  
Chiyoda-ku, Tokyo 101-8010 (JP)

(74) Representative: Beetz & Partner Patentanwälte  
Steinsdorfstrasse 10  
80538 München (DE)

(72) Inventors:  
• Nakamura, Kiyomi  
Hitachi-shi, Ibaraki 316-0035 (JP)

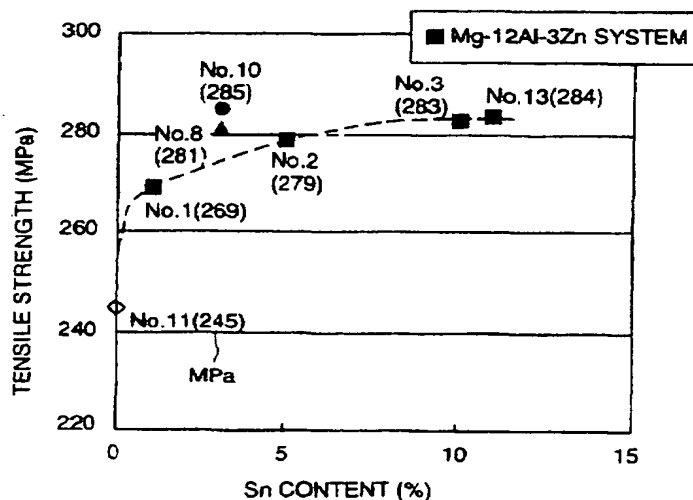
(54) High strength Mg based alloy and its uses

(57) An object of the present invention is to provide a high strength Mg based alloy and an Mg based casting alloy having a good fluidity and a good mechanical prop-

erty, and a molded article using the alloy.

A high strength Mg based alloy, which contains 2 to 20 % of Al by weight; 0.1 to 10 % of Zn; 0.1 to 15 % of Sn and 0.05 to 1.5 % of Mn.

FIG. 6



EP 1 108 799 A3



**European Patent  
Office**

## EUROPEAN SEARCH REPORT

Application Number  
EP 00 12 5394

**DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
X	US 2 000 115 A (MAGNESIUM DEVELOPMENT CORPORATION) 7 May 1935 (1935-05-07) * page 1, left-hand column, line 8 - right-hand column, line 28 * * claims 2,5 *	1,2,8-21	C22C23/02
X	GB 2 058 837 A (MAGNESIUM ELEKTRON LTD) 15 April 1981 (1981-04-15) * page 1, line 46 - line 52 *	1,2,9-21	
X	* page 2; examples AT65, AT62, AT61, ATM61QUARTER, AT6HALF; table 1 *	6,7	
A	* claims *	3	
X	US 1 942 041 A (MAGNESIUM DEVELOPMENT CORPORATION) 2 January 1934 (1934-01-02) * page 1, line 7 - line 80 *	1,2,9-21	
X	* page 1, line 26 - line 68; claims *	7	
X	GB 265 299 A (F. A. HUGHES & COMPANY LTD) 7 February 1927 (1927-02-07) * page 3, line 38 - line 54 *	1,2,9-21	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 7)
X	GB 1 291 553 A (NORSK HYDRO A.S.) 4 October 1972 (1972-10-04) * page 1, line 9 - line 75 * * page 2, line 13 - line 46 * * claims 1-4, 7-10; figure 1 *	1,2,8-21	C22C F16K
A	* claims *	3	
X	US 3 653 880 A (GITLESEN GUNNAR) 4 April 1972 (1972-04-04) * column 1, line 6 - column 2, line 45 * * claims 1,3,4; figure 1 *	1,2,8-21	
A	* claims *	3	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	21 September 2001	Patton, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone  
Y : particularly relevant if combined with another document of the same category  
A : technological background  
O : non-written disclosure  
P : intermediate document

T : theory or principle underlying the invention  
E : earlier patent document, but published on, or after the filing date  
D : document cited in the application  
L : document cited for other reasons

8 : member of the same patent family, corresponding document



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 00 12 5394

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
A	GB 596 102 A (RUPERT MARTIN BRADBURY) 29 December 1947 (1947-12-29) * page 1, line 14 - line 29 * * page 1, line 40 - line 42 *	1-21	
A	EP 0 575 796 A (NORSK HYDRO TECHNOLOGY) 29 December 1993 (1993-12-29) * column 2, line 53-57 *	1-21	
A	DE 19 34 617 A (NORSK HYDRO-ELEKTRISK KVAELSTOFAKTIESELSKAB) 15 January 1970 (1970-01-15) * page 2, line 31 - page 3, line 17; claims *	3	
A	US 4 675 157 A (DAS SANTOSH K ET AL) 23 June 1987 (1987-06-23) * claims *	3	
X	* column 6; example 5; table I *	6,7	
X	US 1 680 262 A (GANN JOHN A) 7 August 1928 (1928-08-07) * page 1, line 63 - line 74; claims 3,5 *	6,7	
X	GB 1 113 304 A (M A N TURBO G M B H) 15 May 1968 (1968-05-15) * page 1, line 36 - line 38; claim 1 *	6,7	TECHNICAL FIELDS SEARCHED (Int. Cl. 7)
X	GB 690 786 A (DOW CHEMICAL CO) 29 April 1953 (1953-04-29) * page 3; examples 1-3 * * claims *	6,7	
The present search report has been drawn up for all claims			

EPO FORM 1503 03/02 (P/4000)

Place of search <b>MUNICH</b>	Date of completion of the search <b>21 September 2001</b>	Examiner <b>Patton, G</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>		

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 00 12 5394

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2000115	A	07-05-1935	NONE
GB 2058837	A	15-04-1981	AU 534059 B2 05-01-1984
		BE 885284 A1 16-01-1981	
		DE 3034938 A1 16-04-1981	
		ES 495152 D0 01-09-1981	
		ES 8106943 A1 01-12-1981	
		FR 2465789 A1 27-03-1981	
		IL 61075 A 30-12-1983	
		IN 153086 A1 26-05-1984	
		IT 1133118 B 09-07-1986	
		JP 1027140 B 26-05-1989	
		JP 1545870 C 28-02-1990	
		JP 56102547 A 17-08-1981	
		NL 8005217 A 23-03-1981	
		NO 802765 A ,B, 20-03-1981	
		SE 452779 B 14-12-1987	
		SE 8006476 A 20-03-1981	
		US 4332864 A 01-06-1982	
US 1942041	A	02-01-1934	NONE
GB 265299	A	07-02-1927	NONE
GB 1291553	A	04-10-1972	NONE
US 3653880	A	04-04-1972	NONE
GB 596102	A	29-12-1947	NONE
EP 0575796	A	29-12-1993	AT 145014 T 15-11-1996
		CA 2097983 A1 11-12-1993	
		DE 69305792 D1 12-12-1996	
		DE 69305792 T2 15-05-1997	
		EP 0575796 A1 29-12-1993	
		JP 2939091 B2 25-08-1999	
		JP 6073485 A 15-03-1994	
		NO 932135 A ,B, 13-12-1993	
		US 5501748 A 26-03-1996	
DE 1934617	A	15-01-1970	NO 119501 B 25-05-1970
		DE 1934617 A1 15-01-1970	
US 4675157	A	23-06-1987	DE 3564702 D1 06-10-1988
		EP 0166917 A1 08-01-1986	
		JP 1681772 C 31-07-1992	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 12 5394

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4675157	A	JP 3044135 B	05-07-1991
		JP 61096046 A	14-05-1986
		JP 3236442 A	22-10-1991
		US 4718475 A	12-01-1988
US 1680262	A	07-08-1928	NONE
GB 1113304	A	15-05-1968	DE 1521145 A1
			10-07-1969
GB 690786	A	29-04-1953	NONE

EPC FORM P0439

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**THIS PAGE BLANK (USPTO)**